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Val Pro Glu Arg Gln Leu Asp Ser Ile His Arg Arg Gln Gly Ser Ser  
 50 55 60

Thr Ser Leu Lys Ser Met Glu Gly Met Gly Lys Val Lys Ala Thr Pro  
 65 70 75 80



Met Thr Pro Glu Gln Ala Met Lys Gln Tyr Met Gln Lys Leu Thr Ala  
85 90 95

Phe Glu His His Glu Ile Phe Ser Tyr Pro Glu Ile Tyr Phe Leu Gly  
100 105 110

Leu Asn Ala Lys Lys Arg Gln Gly Met Thr Gly Gly Pro Asn Asn Gly  
115 120 125

Gly Tyr Asp Asp Asp Gln Gly Ser Tyr Val Gln Val Pro His Asp His  
130 135 140

Val Ala Tyr Arg Tyr Glu Val Leu Lys Val Ile Gly Lys Gly Ser Phe  
145 150 155 160

Gly Gln Val Val Lys Ala Tyr Asp His Lys Val His Gln His Val Ala  
165 170 175

Leu Lys Met Val Arg Asn Glu Lys Arg Phe His Arg Gln Ala Ala Glu  
180 185 190

Glu Ile Arg Ile Leu Glu His Leu Arg Lys Gln Asp Lys Asp Asn Thr  
195 200 205

Met Asn Val Ile His Met Leu Glu Asn Phe Thr Phe Arg Asn His Ile  
210 215 220

Cys Met Thr Phe Glu Leu Leu Ser Met Asn Leu Tyr Glu Leu Ile Lys  
225 230 235 240

Lys Asn Lys Phe Gln Gly Phe Ser Leu Pro Leu Val Arg Lys Phe Ala  
245 250 255

His Ser Ile Leu Gln Cys Leu Asp Ala Leu His Lys Asn Arg Ile Ile  
260 265 270

His Cys Asp Leu Lys Pro Glu Asn Ile Leu Leu Lys Gln Gln Gly Arg  
275 280 285

Ser Gly Ile Lys Val Ile Asp Phe Gly Ser Ser Cys Tyr Glu His Gln  
290 295 300

Arg Val Tyr Thr Tyr Ile Gln Ser Arg Phe Tyr Arg Ala Pro Glu Val  
305 310 315 320

Ile Leu Gly Ala Arg Tyr Gly Met Pro Ile Asp Met Trp Ser Leu Gly

18

Gly Arg Gly Gly Asp Ser Ala Val Arg Gln Leu Gln Ala Ser Pro Gly  
 20 25 30

Leu Gly Ala Gly Pro Thr Arg Ser Gly Val Gly Thr Gly Pro Pro Ser  
 35 40 45

Pro Ile Ala Leu Pro Pro Leu Arg Ala Ser Asn Ala Ala Ala Ala Ala  
 50 55 60

His Thr Ile Gly Gly Ser Lys His Thr Met Asn Asp His Leu His Val  
 65 70 75 80

Gly Ser His Ala His Gly Gln Ile Gln Val Gln Gln Leu Phe Glu Asp  
 85 90 95

Asn Ser Asn Lys Arg Thr Val Leu Thr Thr Gln Pro Asn Gly Leu Thr  
 100 105 110

Thr Val Gly Lys Thr Gly Leu Pro Val Val Pro Glu Arg Gln Leu Asp  
 115 120 125

Ser Ile His Arg Arg Gln Gly Ser Ser Thr Ser Leu Lys Ser Met Glu  
 130 135 140

Gly Met Gly Lys Val Lys Ala Thr Pro Met Thr Pro Glu Gln Ala Met  
 145 150 155 160

Lys Gln Tyr Met Gln Lys Leu Thr Ala Phe Glu His His Glu Ile Phe  
 165 170 175

Ser Tyr Pro Glu Ile Tyr Phe Leu Gly Leu Asn Ala Lys Lys Arg Gln  
 180 185 190

Gly Met Thr Gly Gly Pro Asn Asn Gly Gly Tyr Asp Asp Asp Gln Gly  
 195 200 205

Ser Tyr Val Gln Val Pro His Asp His Val Ala Tyr Arg Tyr Glu Val  
 210 215 220

Leu Lys Val Ile Gly Lys Gly Ser Phe Gly Gln Val Val Lys Ala Tyr  
 225 230 235 240

Asp His Lys Val His Gln His Val Ala Leu Lys Met Val Arg Asn Glu  
 245 250 255

Lys Arg Phe His Arg Gln Ala Ala Glu Glu Ile Arg Ile Leu Glu His  
 260 265 270

Leu Arg Lys Gln Asp Lys Asp Asn Thr Met Asn Val Ile His Met Leu  
 275 280 285

Glu Asn Phe Thr Phe Arg Asn His Ile Cys Met Thr Phe Glu Leu Leu  
 290 295 300

Ser Met Asn Leu Tyr Glu Leu Ile Lys Lys Asn Lys Phe Gln Gly Phe  
 305 310 315 320

Ser Leu Pro Leu Val Arg Lys Phe Ala His Ser Ile Leu Gln Cys Leu  
 325 330 335

Asp Ala Leu His Lys Asn Arg Ile Ile His Cys Asp Leu Lys Pro Glu  
 340 345 350

Asn Ile Leu Leu Lys Gln Gln Gly Arg Ser Gly Ile Lys Val Ile Asp  
 355 360 365

Phe Gly Ser Ser Cys Tyr Glu His Gln Arg Val Tyr Thr Tyr Ile Gln  
 370 375 380

Ser Arg Phe Tyr Arg Ala Pro Glu Val Ile Leu Gly Ala Arg Tyr Gly  
 385 390 395 400

Met Pro Ile Asp Met Trp Ser Leu Gly Cys Ile Leu Ala Glu Leu Leu  
 405 410 415

Thr Gly Tyr Pro Leu Leu Pro Gly Glu Asp Glu Gly Asp Gln Leu Ala  
 420 425 430

Cys Met Ile Glu Leu Leu Gly Met Pro Ser Gln Lys Leu Leu Asp Ala  
 435 440 445

Ser Lys Arg Ala Lys Asn Phe Val Ser Ser Lys Gly Tyr Pro Arg Tyr  
 450 455 460

Cys Thr Val Thr Thr Leu Ser Asp Gly Ser Val Val Leu Asn Gly Gly  
 465 470 475 480

Arg Ser Arg Arg Gly Lys Leu Arg Gly Pro Pro Glu Ser Arg Glu Trp  
 485 490 495

Gly Asn Ala Leu Lys Gly Cys Asp Asp Pro Leu Phe Leu Asp Phe Leu  
 500 505 510

Lys Gln Cys Leu Glu Trp Asp Pro Ala Val Arg Met Thr Pro Gly Gln  
 515 520 525

Ala Leu Arg His Pro Trp Leu Arg Arg Arg Leu Pro Lys Pro Pro Thr  
 530 535 540

Gly Glu Lys Thr Ser Val Lys Arg Ile Thr Glu Ser Thr Gly Ala Ile  
 545 550 555 560

Thr Ser Ile Ser Lys Leu Pro Pro Pro Ser Ser Ser Ala Ser Lys Leu  
 565 570 575

Arg Thr Asn Leu Ala Gln Met Thr Asp Ala Asn Gly Asn Ile Gln Gln  
 580 585 590

Arg Thr Val Leu Pro Lys Leu Val Ser  
 595 600

<210> 15  
 <211> 553  
 <212> PRT  
 <213> Homo sapiens

<400> 15

Met Met Ile Asp Glu Thr Lys Cys Pro Pro Cys Ser Asn Val Leu Cys  
 1 5 10 15

Asn Pro Ser Glu Pro Pro Pro Pro Arg Arg Leu Asn Met Thr Ala Glu  
 20 25 30

Gln Phe Thr Gly Asp His Thr Gln His Phe Leu Asp Gly Gly Glu Met  
 35 40 45

Lys Val Glu Gln Leu Phe Gln Glu Phe Gly Asn Arg Lys Ser Asn Thr  
 50 55 60

Ile Gln Ser Asp Gly Ile Ser Asp Ser Glu Lys Cys Ser Pro Thr Val  
 65 70 75 80

Ser Gln Gly Lys Ser Ser Asp Cys Leu Asn Thr Val Lys Ser Asn Ser  
 85 90 95

Ser Ser Lys Ala Pro Lys Val Val Pro Leu Thr Pro Glu Gln Ala Leu  
 100 105 110

Lys Gln Tyr Lys His His Leu Thr Ala Tyr Glu Lys Leu Glu Ile Ile  
 115 120 125

Asn Tyr Pro Glu Ile Tyr Phe Val Gly Pro Asn Ala Lys Lys Arg His  
 130 135 140  
 Gly Val Ile Gly Gly Pro Asn Asn Gly Gly Tyr Asp Asp Ala Asp Gly  
 145 150 155 160  
 Ala Tyr Ile His Val Pro Arg Asp His Leu Ala Tyr Arg Tyr Glu Val  
 165 170 175  
 Leu Lys Ile Ile Gly Lys Gly Ser Phe Gly Gln Val Ala Arg Val Tyr  
 180 185 190  
 Asp His Lys Leu Arg Gln Tyr Val Ala Leu Lys Met Val Arg Asn Glu  
 195 200 205  
 Lys Arg Phe His Arg Gln Ala Ala Glu Glu Ile Arg Ile Leu Glu His  
 210 215 220  
 Leu Lys Lys Gln Asp Lys Thr Gly Ser Met Asn Val Ile His Met Leu  
 225 230 235 240  
 Glu Ser Phe Thr Phe Arg Asn His Val Cys Met Ala Phe Glu Leu Leu  
 245 250 255  
 Ser Ile Asp Leu Tyr Glu Leu Ile Lys Lys Asn Lys Phe Gln Gly Phe  
 260 265 270  
 Ser Val Gln Leu Val Arg Lys Phe Ala Gln Ser Ile Leu Gln Ser Leu  
 275 280 285  
 Asp Ala Leu His Lys Asn Lys Ile Ile His Cys Asp Leu Lys Pro Glu  
 290 295 300  
 Asn Ile Leu Leu Lys His His Gly Arg Ser Ser Thr Lys Val Ile Asp  
 305 310 315 320  
 Phe Gly Ser Ser Cys Phe Glu Tyr Gln Lys Leu Tyr Thr Tyr Ile Gln  
 325 330 335  
 Ser Arg Phe Tyr Arg Ala Pro Glu Ile Ile Leu Gly Ser Arg Tyr Ser  
 340 345 350  
 Thr Pro Ile Asp Ile Trp Ser Phe Arg Cys Ile Leu Ala Glu Leu Leu  
 355 360 365  
 Thr Gly Gln Pro Leu Phe Pro Gly Glu Asp Glu Gly Asp Gln Leu Ala

370                                      375                                      380  
 Cys Met Met Glu Leu Leu Gly Met Pro Pro Pro Lys Leu Leu Glu Gln  
 385                                      390                                      395                                      400  
 Ser Lys Arg Ala Lys Tyr Phe Ile Asn Ser Lys Gly Ile Pro Arg Tyr  
                                     405                                      410                                      415  
 Cys Ser Val Thr Thr Gln Ala Asp Gly Arg Val Val Leu Val Gly Gly  
                                     420                                      425                                      430  
 Arg Ser Arg Arg Gly Lys Lys Arg Gly Pro Pro Gly Ser Lys Asp Trp  
                                     435                                      440                                      445  
 Gly Thr Ala Leu Lys Gly Cys Asp Asp Tyr Leu Phe Ile Glu Phe Leu  
                                     450                                      455                                      460  
 Lys Arg Cys Leu His Trp Asp Pro Ser Ala Arg Leu Thr Pro Ala Gln  
 465                                      470                                      475                                      480  
 Ala Leu Arg His Pro Trp Ile Ser Lys Ser Val Pro Arg Pro Leu Thr  
                                     485                                      490                                      495  
 Thr Ile Asp Lys Val Ser Gly Lys Arg Val Val Asn Pro Ala Ser Ala  
                                     500                                      505                                      510  
 Phe Gln Gly Leu Gly Ser Lys Leu Pro Pro Val Val Gly Ile Ala Asn  
                                     515                                      520                                      525  
 Lys Leu Lys Ala Asn Leu Met Ser Glu Thr Asn Gly Ser Ile Pro Leu  
                                     530                                      535                                      540  
 Cys Ser Val Leu Pro Lys Leu Ile Ser  
 545                                      550  
  
 <210> 16  
 <211> 520  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 16  
 Met Pro Ala Ser Glu Leu Lys Ala Ser Glu Ile Pro Phe His Pro Ser  
 1                                      5                                      10                                      15  
 Ile Lys Thr Gln Asp Pro Lys Ala Glu Glu Lys Ser Pro Lys Lys Gln  
                                     20                                      25                                      30

Lys Val Thr Leu Thr Ala Ala Glu Ala Leu Lys Leu Phe Lys Asn Gln  
 35 40 45  
 Leu Ser Pro Tyr Glu Gln Ser Glu Ile Leu Gly Tyr Ala Glu Leu Trp  
 50 55 60  
 Phe Leu Gly Leu Glu Ala Lys Lys Leu Asp Thr Ala Pro Glu Lys Phe  
 65 70 75 80  
 Ser Lys Thr Ser Phe Asp Asp Glu His Gly Phe Tyr Leu Lys Val Leu  
 85 90 95  
 His Asp His Ile Ala Tyr Arg Tyr Glu Val Leu Glu Thr Ile Gly Lys  
 100 105 110  
 Gly Ser Phe Gly Gln Val Ala Lys Cys Leu Asp His Lys Asn Asn Glu  
 115 120 125  
 Leu Val Ala Leu Lys Ile Ile Arg Asn Lys Lys Arg Phe His Gln Gln  
 130 135 140  
 Ala Leu Met Glu Leu Lys Ile Leu Glu Ala Leu Arg Lys Lys Asp Lys  
 145 150 155 160  
 Asp Asn Thr Tyr Asn Val Val His Met Lys Asp Phe Phe Tyr Phe Arg  
 165 170 175  
 Asn His Phe Cys Ile Thr Phe Glu Leu Leu Gly Ile Asn Leu Tyr Glu  
 180 185 190  
 Leu Met Lys Asn Asn Asn Phe Gln Gly Phe Ser Leu Ser Ile Val Arg  
 195 200 205  
 Arg Phe Thr Leu Ser Val Leu Lys Cys Leu Gln Met Leu Ser Val Glu  
 210 215 220  
 Lys Ile Ile His Cys Asp Leu Lys Pro Glu Asn Ile Val Leu Tyr Gln  
 225 230 235 240  
 Lys Gly Gln Ala Ser Val Lys Val Ile Asp Phe Gly Ser Ser Cys Tyr  
 245 250 255  
 Glu His Gln Lys Val Tyr Thr Tyr Ile Gln Ser Arg Phe Tyr Arg Ser  
 260 265 270  
 Pro Glu Val Ile Leu Gly His Pro Tyr Asp Val Ala Ile Asp Met Trp  
 275 280 285



Ser Leu Gly Cys Ile Thr Ala Glu Leu Tyr Thr Gly Tyr Pro Leu Phe  
 290 295 300

Pro Gly Glu Asn Glu Val Glu Gln Leu Ala Cys Ile Met Glu Val Leu  
 305 310 315 320

Gly Leu Pro Pro Ala Gly Phe Ile Gln Thr Ala Ser Arg Arg Gln Thr  
 325 330 335

Phe Phe Asp Ser Lys Gly Phe Pro Lys Asn Ile Thr Asn Asn Arg Gly  
 340 345 350

Lys Lys Arg Tyr Pro Asp Ser Lys Asp Leu Thr Met Val Leu Lys Thr  
 355 360 365

Tyr Asp Thr Ser Phe Leu Asp Phe Leu Arg Arg Cys Leu Val Trp Glu  
 370 375 380

Pro Ser Leu Arg Met Thr Pro Asp Gln Ala Leu Lys His Ala Trp Ile  
 385 390 395 400

His Gln Ser Arg Asn Leu Lys Pro Gln Pro Arg Pro Gln Thr Leu Arg  
 405 410 415

Lys Ser Asn Ser Phe Phe Pro Ser Glu Thr Arg Lys Asp Lys Val Gln  
 420 425 430

Gly Cys His His Ser Ser Arg Lys Ala Asp Glu Ile Thr Lys Glu Thr  
 435 440 445

Thr Glu Lys Thr Lys Asp Ser Pro Thr Lys His Val Gln His Ser Gly  
 450 455 460

Asp Gln Gln Asp Cys Leu Gln His Gly Ala Asp Thr Val Gln Leu Pro  
 465 470 475 480

Gln Leu Val Asp Ala Pro Lys Lys Ser Glu Ala Ala Val Gly Ala Glu  
 485 490 495

Val Ser Met Thr Ser Pro Gly Gln Ser Lys Asn Phe Ser Leu Lys Asn  
 500 505 510

Thr Asn Val Leu Pro Pro Ile Val  
 515 520

<210> 17  
 <211> 520  
 <212> PRT  
 <213> Homo sapiens

<400> 17

Met Pro Ala Ser Glu Leu Lys Ala Ser Glu Ile Pro Phe His Pro Ser  
 1 5 10 15

Ile Lys Thr Gln Asp Pro Lys Ala Glu Glu Lys Ser Pro Lys Lys Gln  
 20 25 30

Lys Val Thr Leu Thr Ala Ala Glu Ala Leu Lys Leu Phe Lys Asn Gln  
 35 40 45

Leu Ser Pro Tyr Glu Gln Ser Glu Ile Leu Gly Tyr Ala Glu Leu Trp  
 50 55 60

Phe Leu Gly Leu Glu Ala Lys Lys Leu Asp Thr Ala Pro Glu Lys Phe  
 65 70 75 80

Ser Lys Thr Ser Phe Asp Asp Glu His Gly Phe Tyr Leu Lys Val Leu  
 85 90 95

His Asp His Ile Ala Tyr Arg Tyr Glu Val Leu Glu Thr Ile Gly Lys  
 100 105 110

Gly Ser Phe Gly Gln Val Ala Lys Cys Leu Asp His Lys Asn Asn Glu  
 115 120 125

Leu Val Ala Leu Lys Ile Ile Arg Asn Lys Lys Arg Phe His Gln Gln  
 130 135 140

Ala Leu Met Glu Leu Lys Ile Leu Glu Ala Leu Arg Lys Lys Asp Lys  
 145 150 155 160

Asp Asn Thr Tyr Asn Val Val His Met Lys Asp Phe Phe Tyr Phe Arg  
 165 170 175

Asn His Phe Cys Ile Thr Phe Glu Leu Leu Gly Ile Asn Leu Tyr Glu  
 180 185 190

Leu Met Lys Asn Asn Asn Phe Gln Gly Phe Ser Leu Ser Ile Val Arg  
 195 200 205

Arg Phe Thr Leu Ser Val Leu Lys Cys Leu Gln Met Leu Ser Val Glu  
 210 215 220

Lys Ile Ile His Cys Asp Leu Lys Pro Glu Asn Ile Val Leu Tyr Gln  
225 230 235 240

Lys Gly Gln Ala Ser Val Lys Val Ile Asp Phe Gly Ser Ser Cys Tyr  
245 250 255

Glu His Gln Lys Val Tyr Thr Tyr Ile Gln Ser Arg Phe Tyr Arg Ser  
260 265 270

Pro Glu Val Ile Leu Gly His Pro Tyr Asp Val Ala Ile Asp Met Trp  
275 280 285

Ser Leu Gly Cys Ile Thr Ala Glu Leu Tyr Thr Gly Tyr Pro Leu Phe  
290 295 300

Pro Gly Glu Asn Glu Val Glu Gln Leu Ala Cys Ile Met Glu Val Leu  
305 310 315 320

Gly Leu Pro Pro Ala Gly Phe Ile Gln Thr Ala Ser Arg Arg Gln Thr  
325 330 335

Phe Phe Asp Ser Lys Gly Phe Pro Lys Asn Ile Thr Asn Asn Arg Gly  
340 345 350

Lys Lys Arg Tyr Pro Asp Ser Lys Asp Leu Thr Met Val Leu Lys Thr  
355 360 365

Tyr Asp Thr Ser Phe Leu Asp Phe Leu Arg Arg Cys Leu Val Trp Glu  
370 375 380

Pro Ser Leu Arg Met Thr Pro Asp Gln Ala Leu Lys His Ala Trp Ile  
385 390 395 400

His Gln Ser Arg Asn Leu Lys Pro Gln Pro Arg Pro Gln Thr Leu Arg  
405 410 415

Lys Ser Asn Ser Phe Phe Pro Ser Glu Thr Arg Lys Asp Lys Val Gln  
420 425 430

Gly Cys His His Ser Ser Arg Lys Ala Asp Glu Ile Thr Lys Glu Thr  
435 440 445

Thr Glu Lys Thr Lys Asp Ser Pro Thr Lys His Val Gln His Ser Gly  
450 455 460

Asp Gln Gln Asp Cys Leu Gln His Gly Ala Asp Thr Val Gln Leu Pro

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